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Lipid panel of broilers fed with Jamun (*Syzygium cumini*) seeds as an unconventional supplement

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Abstract

An experiment was conducted using two hundred and forty day old chicks which were randomly distributed into four groups of 5 replicates and offered four diets for six weeks. Diets were prepared with inclusion of unconventional feed Jamun (*Syzygium cumini*) seeds at 0%, 0.5%, 1% and 1.5%, respectively in T₁, T₂, T₃ and T₄ groups. All standard practices were adopted while conducting the trial. Lipid profile like triglycerides HDL, LDL, VLDL and LDL/HDL ratio at the end of the trial showed non-significant ($p \geq 0.05$) differences among all the diets. Study concluded to include 1.5 % of unconventional feed Jamun in broilers diet without affecting lipid profile.

Keywords: Triglycerides, unconventional feed, Jamun seed

Introduction

Common names for Jamun are Java plum, Black plum, Jambul, Indian blackberry, Jambul, Java plum, Jamlang, Jambu, Malabar plum, Duhat and Portugese plum. The original home of Jamun is India, being distributed throughout the country, in the forest up to 1800 m usually along the bank and moist localities (Kirtikar and Basu, 1975) [4].

Mastan *et al.* (2008) [6] suggested that the methanolic extract of Jamun seeds possesses promising immunomodulatory activity. The methanolic extract of Jamun seeds also possess broad antibacterial spectrum and anti-fungal activity (Mathur *et al.*, 2011) [7].

Several workers (Kumar *et al.*, 2008; Modi *et al.*, 2010) [5, 8] have reported anti-inflammatory effect of Jamun seed extract on carrageenan induced odema. The seed extract possess analgesic activity (Chakraborty *et al.*, 2004) [1] and potent anti-inflammatory action against both exudative and proliferative phases of inflammation. The results further showed a significant anti-arthritic activity and a significant antipyretic activity in rats (Chaudhuri *et al.*, 1990) [2].

Materials and Methods

Broiler-pre-starter, broiler-starter and broiler-finisher rations were prepared as per ICAR (2013) [3] recommendations with conventional feed ingredients. Test diets formulated by addition of Jamun seed at three different levels (0.5%: T₂, 1%: T₃ and 1.5%: T₄). Control diet was without jamun seed.

Day old chicks of two hundred and forty number were housed under deep litter system by diving in to twenty groups. Total of four diets were given *ad libitum* to five groups each. This trial was lasted for 6 weeks. During this experiment, the data on survivability was studied. Two birds from all replications were selected for blood collection. Serum was separated individually and subjected for lipid profile.

Statistical methods: Data obtained was analyzed using suitable statistical software (Snedecor and Cochran, 1995) [9].

Results and Discussion

Table 1 summarizes the mean lipid profile of serum under different groups on 42nd day of the experiment and graphically summarized in figure 1 and 2.

At the end of 42 days, the mean serum triglyceride values were 63.48 mg/dl in control group (T₁), 72.23 mg/dl in 0.5 percent Jamun seed fed group (T₂), 64.54 mg/dl in 1 percent Jamun seed fed group (T₃) and 62.76 mg/dl in 1.5 percent Jamun seed fed group (T₄). Statistical analysis revealed no significant ($p \geq 0.05$) difference among different dietary treatment groups.

At the end of 42 days, the mean serum high density lipoprotein (HDL) values were 88.46 mg/dl in control group (T₁), 88.56 mg/dl in 0.5 percent Jamun seed fed group (T₂), 85.09 mg/dl in 1 percent Jamun seed fed group (T₃) and 87.29 mg/dl in 1.5 percent Jamun seed fed group (T₄). Statistical

analysis revealed no significant ($p>0.05$) difference among different dietary treatment groups.

At the end of 42 days, the mean serum low density lipoprotein (LDL) values were 27.86 mg/dl in control group (T₁), 31.28 mg/dl in 0.5 percent Jamun seed fed group (T₂),

Table 1: Lipid profile of birds fed with different levels of Jamun seed on 42nd day

| Dietary description | | Triglycerides (mg/dl) | HDL | LDL | VLDL | LDL/HDL Ratio |
|---------------------|---|-----------------------|------------|------------|------------|---------------|
| T ₁ | Control diet | 63.48±4.56 | 88.46±2.59 | 27.86±1.81 | 13.02±0.84 | 0.31±0.023 |
| T ₂ | 0.5% Jamun seed inclusion in the control diet | 72.23±7.91 | 88.56±2.01 | 31.28±3.34 | 13.82±1.88 | 0.34±0.032 |
| T ₃ | 1% Jamun seed inclusion in the control diet | 64.54±8.50 | 85.09±5.88 | 24.22±1.19 | 11.11±1.76 | 0.29±0.019 |
| T ₄ | 1.5% Jamun seed inclusion in the control diet | 62.76±6.19 | 87.29±2.26 | 25.93±3.63 | 12.53±1.24 | 0.29±0.03 |
| F value | | 1.07 | 0.20 | 1.26 | 6.05 | 0.76 |

*Means bearing different superscripts within the column are statistically significant at $p\leq 0.05$.

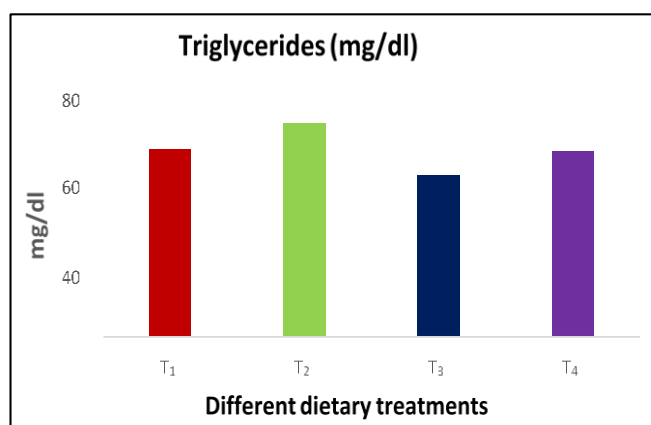


Fig 1: Serum triglyceride values on 42nd day of broilers supplemented with Jamun seeds

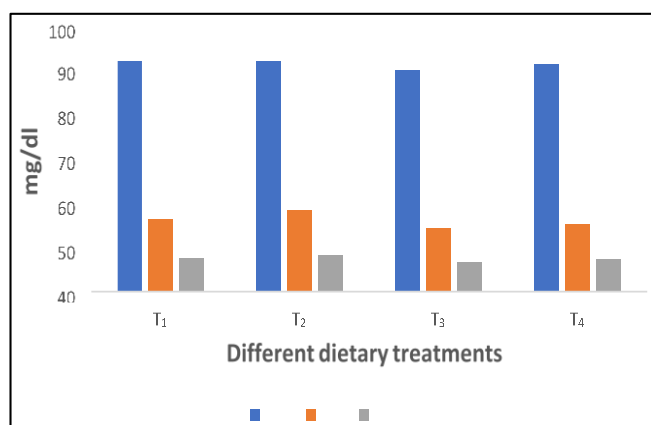


Fig 2: Serum LDL, HDL, VLDL values on 42nd day of broilers supplemented with Jamun seeds

24.22 mg/dl in 1 percent Jamun seed fed group (T₃) and 25.93 mg/dl in 1.5 percent Jamun seed fed group (T₄). Statistical analysis revealed no significant ($p>0.05$) difference among different dietary treatment groups.

At the end of 42 days, the mean serum very low-density lipoprotein (VLDL) values were 13.02 mg/dl in control group (T₁), 13.82 mg/dl in 0.5 percent Jamun seed fed group (T₂), 11.11 mg/dl in 1 percent Jamun seed fed group (T₃) and 12.53 mg/dl in 1.5 percent Jamun seed fed group (T₄). Statistical analysis revealed no significant ($p>0.05$) difference among different dietary treatment groups. Similarly, LDL/HDL ratio ranged from 0.29 (T₃ and T₄) to 0.34 (T₂).

Conclusion

Conclusion of the study was: 1.5 % Jamun (*Syzygium cumini*) seeds in broiler diet had no deleterious effect on lipid profile.

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